Ontario fish and wildlife Review

Vol. 16, No. 4 1977

ENDANGERED SPECIES ISSUE

Ontario fish and wildlife Review

ISSN 0030-2929

Vol. 16, No. 4 WINTER, 1977

ENDANGERED SPECIES PAGE

The Ontario Endangered and Threatened Species Program ... 3
Historical Perspective ... 6
Bald Eagle ... 10
Piping Plover ... 11
White Pelican ... 11
Blue Racer ... 12
Golden Eagle ... 14
Small White Lady's Slipper ... 14
West Virginia White Butterfly ... 15
Peregrine Falcon ... 17
Kirtland's Warbler ... 19
Timber Rattlesnake ... 20
Eastern Cougar ... 21
Lake Erie Water Snake ... 21
Eskimo Curlew ... 22
The Endangered Species Act ... 25

Our special issue is the work of Gerald McKeating and Irene Bowman, respectively our interpretation and endangered species biologist and non-game wildlife biologist.

Both are in the extension and interpretation section of Wildlife Branch in the Toronto office.

McKeating and Bowman report the progress to date on the identification and protection of endangered and threatened species in Ontario.

This issue is addressed to all readers but particularly to the many people who have indicated their concern about the increasing threats to native fish and wildlife.

Most of our photographs belong to Gerry McKeating but we are also indebted to the following for the pics on the pages as noted below:
Cover white pelicans — B. Ranford
4— D. H. Pimlott
7, 8— Ontario Archives
9— E. Thimm
10— D. Gunn
11 bottom— G. Peck
14 top— P. M. Catling
15— E. Thimm
16— B. Griffiths
20— H. Halliday
21 top— Miller Services

Ontario Fish and Wildlife Review is published quarterly by the Ministry of Natural Resources (Division of Fish and Wildlife), Toronto, Ontario M7A 1W3. Material herein may be reprinted provided credit is given to the author and this publication.

Editorial committee: F. P. Maher, J. L. Tiller, A. A. Wainio and L. Whistance-Smith.

The goal of the Ministry of Natural Resources is to provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario, and to administer, protect and conserve public lands and waters.

Ministry of
Natural
Resources
Ontario

Hon. James A. C. Auld
Minister

Dr. J. K. Reynolds
Deputy Minister

5635

One-year subscription rate: $2.50 in remittance payable to Treasurer of Ontario
Publications Service, Ministry of Government Services, Toronto, Ontario M7A 1N8

A MORAL OBLIGATION

There are compelling reasons for Ontario's Endangered and Threatened Species Program. Morally, we have the obligation to ensure that no indigenous species becomes extinct as a result of our actions. The extent to which we fulfil this obligation is a measure of our environmental ethic.

Extinction is irreversible. Genetic material, once lost, cannot be duplicated. The loss of a species forecloses options that might benefit some future generation. We do not have the right to remove those options.

The desirability of conserving life forms meets with little opposition when considered in abstract terms. But mere acceptance of a conservation ideal has saved few species. We must be prepared to engage in sound, biological management to reach our goals and to sacrifice, when necessary, some short-term economic benefits.

A species which lacks any apparent economic or even aesthetic value is difficult to protect in our strongly exploitative society. The Lake Erie water snake, for example, is a 'non-resource' for most people. Even those of us who profess strong conservation principles may zealously protect certain species while showing little concern for the less spectacular.

Many economic or ecological justifications can be advanced for the protection of wildlife species but their conservation cannot rely solely on these arguments. Clearly a fundamental value is at issue. Wildlife species have the unimpeachable right to exist in nature without man's interference.

It is no longer appropriate to fantasize about vast areas of wilderness and teeming hordes of wildlife. The threat to wildlife throughout the world cannot be minimized, but, in Ontario alone, few of us realize how many species of plants and animals there are, and the number of practical problems which require solving.

The setting of priorities and the implementation of realistic programs is a monumental endeavour. Some species are highly threatened, others are declining, and still others appear to be faring well. But which is which? Ontario's Endangered and Threatened Species Program attempts to identify the species most urgently in need of protection and management.

COMMENTARY

FISH POSE SPECIAL PROBLEMS

This issue of "Review" is devoted to species which are protected under The Endangered Species Act of Ontario. Fish are not mentioned because they are a federal responsibility under the British North America Act and can only be protected by federal legislation.

A special difficulty in protecting fish is that some species, which are thought to be endangered, are extremely difficult to identify. For example, of the seven species of deep water ciscoes or "chubs" in the Great Lakes, six have shown a marked decline because of environmental degradation, fishing pressure and attack by the sea lamprey, *Petromyzon marinus.* The six threatened ciscoes are the longjaw, *Coregonus alpenae;* deepwater, *Coregonus johannae;* shortnose, *Coregonus reighardi;* shortjaw, *Coregonus zenithicus;* blackfin, *Coregonus nigripinnis;* and the kiyi, *Coregonus kiyi.*

These ciscoes are now either extinct or exceedingly rare in Lakes Ontario, Erie, Michigan and Huron. Of the four species formerly found in Lake Superior, only three are known to survive there, and the population of one of these is greatly reduced.

The principal problem in protecting these species is that they bear a remarkable similarity to one another and to other species of coregonids, and they usually require expert identification. They have often been taken in mistake for other species such as the lake herring *(Coregonus artedii)* and even the lake whitefish *(Coregonus clupeaformis).* Under the Ontario Fishery Regulations, the taking of these ciscoes can be prohibited by year-round fishing closure but this would afford no protection if they cannot be readily identified by fishermen.

At the present time the Ontario Fishery Regulations, which are promulgated under authority of the federal Fisheries Act, protect only one species of fish, the Aurora trout, *Salvelinus timagamiensis.*

More species of fish can and will be protected by special closures when the need and practicality are demonstrated.

THE ONTARIO ENDANGERED AND THREATENED SPECIES PROGRAM

ON July 23, 1971, the Ontario Legislature passed The Endangered Species Act. Four species were listed as endangered on July 11, 1973, eight on January 26, 1977, and one on August 8, 1977. Under the Act the 13 endangered species are as follows:

1. Blue racer, *Coluber constrictor foxi* Baird & Girard
2. Timber rattlesnake, *Crotalus horridus horridus* Linnaeus
3. Peregrine falcon, *Falco peregrinus anatum* Bonaparte
4. Bald eagle, *Haliaeetus leucocephalus alascanus* Townsend
5. West Virginia white butterfly, *Pieris virginiensis* Edwards
6. Lake Erie water snake, *Natrix sipedon insularum* Conant and Clay
7. Piping plover, *Charadrius melodus* Ord
8. Eskimo curlew, *Numenius borealis* Forster
9. Golden eagle, *Aquila chrysaëtos* Linnaeus
10. White pelican, *Pelecanus erythrorhynchos* Gmelin
11. Mountain lion or eastern cougar, *Felis concolor couguar* Kerr
12. Small white lady's-slipper orchid, *Cypripèdium càndidum* Muhl
13. Kirtland's warbler, *Dendroica kirtlandii* Baird

An Endangered and Threatened Species Program was developed in 1976. Under the supervision of Wildlife Branch, it undertakes to identify species whose continued existence in Ontario may be in jeopardy.

The goal of the program is to ensure that no plant or animal species indigenous to Ontario becomes extinct as a result of the action of man. An implicit goal is to be able to remove species from the list.

Before a species is listed as endangered under the Act, the available evidence is assessed to determine its population status. A recommendation may then be made for consideration by the legislature. If endangered designation is not warranted, the species may still be given attention in other management programs to ensure that it does not decline to a critical level.

The assessment of any species involves a detailed examination of many factors such as the following: the species' historic distribution in Ontario in comparison with its present distribution; the population size and trend in Ontario; the status of the species throughout its North American range; the degree of its habitat specialization; the current level of habitat protection; and existing or potential threats to its habitat. In addition, behavioural and reproductive factors may be examined. Subjective judgement is sometimes necessary since sufficient data for these assessments are often lacking.

The definitions adopted under the program are as follows:

Endangered: Any species of indigenous fauna or flora which is threatened with immediate extinction in Ontario as a result of the action of man.

Threatened: Any species of indigenous fauna or flora that could become endangered in the near future if the factors causing population declines are not reversed.

Vulnerable: Any species of indigenous fauna or flora that, because of its inherent biological susceptibility, could suffer severe population

declines should factors essential to survival be altered.

The third category would include, for example, some species of colonial nesting birds which are restricted in their distribution. Human disturbances during the critical nesting period could cause the loss of many young.

In management, priority is given to "endangered" species. However, threatened and vulnerable species may require special management to ensure that they do not slide into the endangered category. For these species, timely attention is necessary to avoid expensive crisis management programs similar to those employed for whooping cranes (*Grus americana)* in other parts of North America.

Many species are naturally rare or present in small numbers in Ontario irrespective of man's activities. A number of these "rare" species occur peripherally – that is, on the fringe of their primary range. Although restricted here, healthy populations exist elsewhere. Some prairie plants, songbirds, reptiles and amphibians exhibit this type of distribution.

Rare or peripheral species which are present in small numbers because of natural range limitations are not endangered and should not be designated under The Endangered Species Act. Neither does this Act apply to species which are pioneering, extending their range, or experiencing cyclic range expansion. These species can be maintained in other ways. Their habitats might be designated as nature reserves or conserved through sensitive lands planning where feasible.

Protection under the Act might be necessary in certain cases. For example, a peripheral species would be protected if it were known to be threatened or endangered over a large portion of its primary range outside Ontario.

Confusion has arisen about the status of some species because of their pattern of distribution.

Timber wolves (*Canis lupus*), for example, are designated as endangered in some parts of the United States, but misinformation has created the impression that wolves are endangered everywhere. Timber wolves are, in fact, present in substantial numbers in Ontario and they are not endangered.

The designation of a species as "endangered" means more than adding another name to the list. Management projects, whether for butterflies or bald eagles, are necessary to help endangered species recover. Considerations that affect decisions for management action include the following.

- Degree of Public Interest. A high-interest species such as the bald eagle will produce demands for action. However, we cannot afford to ignore low-interest species such as the Lake Erie water snake.
- Taxonomic Status of Species. Although it is desirable to protect all local gene pools, it may only be practical to protect species and recognizable subspecies.
- Data Reliability. When reliable data are scarce, subjective judgements may have to be the bases for decisions.
- Budget Considerations. It is unlikely that sufficient funds will be allotted to manage all species. Priority will be given to species most urgently in need of management or to projects most likely to succeeed.
- Opportunities for Co-operation. Co-operation with government agencies, interest groups and specialists from the private sector is desirable to distribute the work and increase the chances for success. Work groups may develop a portion of a project to identify and arrest factors detrimental to a species.

In view of increasing developmental pressures on the land base, management guidelines are necessary and are being developed to ensure that fish and wildlife habitat requirements are considered in land-use proposals. Guidelines, and other information outlining these requirements, must be made available to land-use planners early in the planning process to avoid the loss of critical habitats.

It is impossible to protect many wide-ranging species by merely setting aside small, isolated parcels of suitable habitat. Management must ensure the biological integrity of habitats. Thus the approach to habitat preservation offered by management guidelines is assuming greater importance, not only for endangered and threatened species, but for all fish and wildlife.

Ecologically sound land-use planning and management is the only effective way to protect fish and wildlife habitat in the future.

Two timber wolves in Algonquin Provincial Park. This species is not endangered in its Ontario range.

HISTORICAL PERSPECTIVE

ALMOST 10,000 years have passed since the ice sheets of the Wisconsin glaciation retreated from Ontario. Ice and water shaped the face of this province, and in their wake a diversity of species pushed northward to colonize new habitats on land and in the lakes and rivers formed from glacial meltwaters.

In comparison with these long term climatic effects, an equally dramatic chain of events was set in motion by man only 200 years ago. Within decades, European settlement destroyed complex biological communities that had developed over many thousands of years. Indeed, since the late 18th century, man has had a greater influence on the distribution of many native Ontario species than natural climatic controls.

One fairly obvious manifestation of man's impact was the rapid disappearance of a number of species in Ontario. By the end of the 19th century the eastern elk *(Cervus canadensis)* and Atlantic salmon *(Salmo salar)* were gone, to be followed in the first decade of the 20th century by the passenger pigeon *(Columba migratoria)* and wild turkey *(Meleagris gallopavo)*. The timber rattlesnake *(Crotalus horridus horridus)* was probably extinct in Ontario by about mid-century.

Concepts about endangered species have developed fairly recently. Only over the past half-century has a general awareness evolved that fish and wildlife cannot be uncontrollably harvested, and that habitats cannot be continually reduced. Of the explorers, missionaries and settlers who remarked upon Ontario's abundant resources from the 17th to the early 19th centuries, very few expressed concern for the resources.

The accounts of some of the first Europeans to visit the lower Great Lakes region provide valuable information on the abundance and distribution of fish and wildlife in the pre-settlement period. One of the earliest, a Memoire by the Sulpicien Father Francois de Salignac-Fenelon, dated 1670, describes the lands and waters surrounding the Kente Mission on the Bay of Quinte as follows: "The river is very abundant in fish and the lands which surround her farther on are very fertile, and they are still all covered in moose, stags (eastern elk), deer, bear, beavers, etc."

Similarly Father Louis Hennepin, who travelled with La Salle aboard the Griffon, wrote in 1679 that the lands in the vicinity of the Detroit and St. Clair rivers were "stocked with stags, wild goats (white-tailed deer) and bears . . . turkey cocks and swans are there also very common; and our men brought several other beasts and birds, whose names are unknown to us . . ."

By the early settlement period, the consensus among those who wrote on the subject seemed to be that fish and wildlife were still very plentiful. In 1834, William Pope, the well-known artist, naturalist and sportsman, who is sometimes referred to as "Canada's Audubon," wrote of "prodigious quantities of ducks" which blackened the waters at Long Point Bay in autumn. However, Pope sounded a note of apprehension when he added "though the clouds of Ducks is really astonishing, I am told by old settlers that they are not so numerous as they were formerly . . ."

The same note was echoed again in 1866 by Wing Rogers of Pickering Township who chronicled the decline of Lake Ontario's native population of Atlantic salmon. Only 30 years before this species disappeared, Rogers warned that the salmon were "fast diminishing" as a result of increasing exploitation, the construction of milldams "which prevented them from going up to spawn" and other human activities in areas "where 60 or 80 years before there was not a white man to be seen."

With the exception of a few perceptive individuals, the majority in the 19th century believed that fish and wildlife resources were inexhaustible. The idea that habitat should be

The first settler's shanty at Palmerston.

preserved for wild species was almost unheard of at a time when great effort was being expended to clear and conquer wilderness. Most people assumed that if forests were cleared or wetlands drained, the plants and animals would simply retreat elsewhere. They did not understand that each species has its own particular set of habitat requirements which often prevent it from adapting to changes brought about by man.

The attitude that wilderness represented a hostile environment to be "tamed" was responsible for the loss of much excellent habitat long before its importance was recognized. The drainage and cultivation of a unique area of tall grass and wet prairie habitat in the extreme southwestern corner of the Province illustrates this point particularly well. Most of the agriculturally desirable prairie soils were turned and planted during the first few decades of the past century, resulting in loss of habitat for many species of extremely limited distribution within the Province. One of these, the small white lady's-slipper orchid *(Cypripedium candidum)* has been protected under The Endangered Species Act.

The first species to be affected by the inroads of settlement were those whose specialized requirements made them most vulnerable to change. The eastern elk, for example, once ranged from the lower lakes to Lake Nipissing. However, its wooded grassland habitat was quickly appropriated for agriculture and settlement and it was probably extinct in Ontario by about 1850.

Although the precise reasons for the decline of Ontario's native population of wild turkeys are unknown, this species probably succumbed to habitat destruction. The wide-ranging turkey flocks required extensive tracts of mature hardwood forest for foraging and roosting. As land clearing and settlement gained momentum, the dwindling turkey populations were restricted to poorer habitats and disappeared soon after the turn of the century.

In a few instances, species whose habitats were being destroyed were at the same time under pressure from another source – market hunting. Although hunting and fishing by individual settlers for subsistence purposes did not place undue stress on fish and wildlife populations, market hunting (unregulated exploitation for commercial profit) involved tremendous excesses, as in the case of the passenger pigeon.

A little over 100 years ago, the suggestion that passenger pigeons might become extinct would have provoked about as much concern as a similar statement about blackbirds today. Each spring, seemingly endless flocks of migrants were observed en route to nesting areas in large tracts of mature forest throughout eastern North America. Early settlers who witnessed the spectacular migration flights could not have imagined that the passenger pigeon would one day disappear.

Yet it happened. In the closing decades of the 19th century, this once abundant species suffered a dramatic decline. Market hunting, which had developed into a large-scale business in the 1840s, supplied growing markets in eastern Canadian and American cities with millions of birds. At the same time, logging and land clearing destroyed the forests which had served as nesting and feeding areas. Populations crashed under the weight of combined pressures, and the last undisputed Ontario sighting, of only two birds, took place near Penetanguishene in 1902.

During the first few decades of the 20th century, earlier notions about limitless wildlife resources began to be challenged, and the need for wildlife management was recognized. Since that time no native Ontario species has been subjected to excesses comparable to those of the 19th century.

Contrary to popular belief, exploitation was not a deciding factor in the majority of cases in which species declined. Habitat destruction has had the broadest impact through urbanization, recreational development and agricultural uses of land. This impact will undoubtedly become more severe as pressures for space and other resources increase.

In the 19th and early 20th centuries, natural environments were altered in ways that enabled some species of wildlife to coexist with man. Thus wildlife (albeit different species) could survive in a hedgerow bordering a farm field that had replaced a mature stand of trees. On the other hand, very little could survive today in a paved parking lot covering a farm field.

Land-use practices of an earlier period which destroyed habitat for one species did, in fact, frequently create new habitat for species with other survival requirements. Initially, forest clearance accelerated the creation of productive "edge" or transitional habitat, which in unaltered environments occurs as a result of natural phenomena such as forest fires and windfalls. Abandoned and regenerated farm fields, too, helped to preserve a mosaic of different habitat types.

Despite the loss of several species which could survive only in extensive wooded habitats, the number of wildlife species in the province – introductions excluded – increased between the mid-19th and mid-20th centuries. Species such as Brewer's blackbird *(Euphagus*

cyanocephalus) and the Franklin ground squirrel *(Citellus franklinii)* which were previously unreported in Ontario, apparently extended their breeding ranges into new edge or prairie-type habitats, respectively. Similarly, the white-tailed deer *(Odocoileus virginianus)*, mourning dove *(Zenaidura macroura)* and a number of other species expanded their existing ranges within the Province. This phenomenon continues to some degree as songbirds, notably cardinals *(Richmondena cardinalis)*, colonize areas of planted vegetation in urban settings.

Earlier land-use practices benefitted at least some species, but in recent decades intensive agriculture and urbanization have created wastelands for wildlife. Remaining plots of suitable habitat have become islands which effectively isolate wildlife populations. Under these circumstances, even species, which initially benefitted from land clearing, have declined.

The task of preserving a diversity of habitats to ensure the survival of all species of our native fauna and flora is now a key management issue. It is also an issue which defies simple or convenient solutions. The answers to other problems have been more obvious; the use of harmful chemicals can be controlled, and hunting, fishing and trapping are carefully regulated. However, habitat preservation requires the full `co-operation of all landowners.

Most urgently in need of protection are many remaining wetlands, areas of mature deciduous forest, and certain unique habitats whose quality or very existence is threatened by development. Wetlands and deciduous forests have been drastically reduced, especially in the southwestern counties where a mere fraction of their original acreages remains.

Too often, we tend to assume that the plants and animals must be somewhere else – that development cannot possibly pose a serious threat in such a large province. But if we take this attitude, we have learned nothing from our predecessors who discovered that the "vast forests" did not support inexhaustible wildlife populations.

Perhaps the most important lesson to be learned from the past is that no species should be taken for granted. Even "common" species are part of our heritage and require our attention and care. If we care about preserving a diversity of species, we will ensure that a diversity of habitats exists to accommodate them.

Our contribution may require very little personal effort; it could be as simple as building a nest box or planting a shrub in the backyard to provide food and cover for migrating birds. If many people make small efforts such as these, fish and wildlife populations will benefit.

The decisions we make today about land use will determine whether many of our native species remain "common"in years to come.

ONTARIO'S ENDANGERED AND THREATENED SPECIES

BALD EAGLE

Haliaeetus leucocephalus alascanus

The bald eagle is one of Ontario's most impressive birds of prey, with a total length of almost one metre and a wing span which more than doubles this measurement. Adult birds are easily recognized by their large size and by the pure white feathers of the head, neck and tail.

The breeding distribution of Ontario bald eagles once extended from the lower Great Lakes northward to the tree line. Populations still appear to be stable in the lake and river country of northwestern Ontario, particularly in prime habitat west of Lakes Nipigon and Superior. However, in settled and cultivated parts of the Province, numbers have declined sharply. This decline has been most evident along the lower Great Lakes because of the combined pressures of habitat destruction and pesticide contamination of fish, their main food item.

Bald eagle breeding failures, caused by the presence of DDT in the food chain, were first observed in the southern United States in the late 1940s. Most pesticides in the DDT group (organochlorines) are now banned or restricted both in Canada and the United States, but residues are still present in drainage waters from areas previously treated with these stable compounds. Although the food supply in northwestern Ontario is not heavily contaminated, the birds still pick up residues on their wintering grounds.

As recreational and developmental pressures increase, human interference could pose a serious threat to northwestern Ontario bald eagle populations. To help prevent this, management guidelines have been developed to protect known nesting territories and to minimize disturbances at sensitive times of the breeding season. Much of the information in the guidelines has been adapted from programs developed by the United States Forest Service.

The guidelines specify the level of activity that can be tolerated during the breeding season, and the size of the buffer zone necessary to ensure that the birds are not disturbed. With the acceptance and implementation of these protective measures in various resource-use proposals, the healthy bald eagle populations of the north should be maintained.

Studies are being conducted to assess the status of Ontario bald eagle populations and to identify the factors responsible for reproductive success or failure. Field work has centered on two census plots, one on Lake of the Woods and the other at Red Lake. Aerial surveys have been undertaken to locate all eagle nests in these areas and to determine the number of young produced. Young have also been banded to obtain data on mortality rates from band returns.

At present, sufficient young are fledged to sustain bald eagle populations in northwestern Ontario, but the species shows no signs of recovering along the lower Great Lakes. If environmental conditions are improved, management programs involving the introduction of young birds from healthy populations may eventually be developed to restock a portion of the southern Ontario breeding range.

WHITE PELICAN

Pelecanus erythrorhynchos

Ontario's only white pelican nesting colony is located on Lake of the Woods, near the eastern limit of the species' breeding range. Many people would probably be interested to learn that these large, distinctive water birds breed on remote inland lakes in western Canada and the United States.

White pelicans were first reported nesting on islands in Lake of the Woods in 1938 but there were no further reports of breeding activity until 1954. Discontinuous use of the nesting islands may have resulted from interference by people who mistakingly believed that the birds were eating large quantities of valuable fish. White pelicans usually feed on coarse fish species which have little or no commercial value.

During the breeding season, these timid birds are especially sensitive to human disturbances. When frightened, they abandon their nests for long periods of time, leaving unattended eggs or young exposed to sun, wind and predatory gulls. The young of an entire nesting season could die from exposure due to a single thoughtless action by a boater or visitor to the nesting islands.

In Canada's western provinces, at least 10 white pelican colonies have disappeared since 1950 because of human interference. Without protection from increasing recreational pressures, Ontario's only colony could be added to the list.

PIPING PLOVER

Charadrius melodus

The piping plover was once a fairly common nesting species of undisturbed sand and gravel beaches in Ontario. Before the 1930s, its breeding distribution was widespread, extending from the lower Great Lakes and St. Lawrence River northward to Georgian Bay. This small shorebird is now known to nest regularly at only one location in Ontario.

Shoreline development and recreational uses of beach property have been responsible for the decline of the piping plover throughout much of its range. At the Lake Erie nesting site, in Norfolk County, the habitat is still relatively undisturbed, but natural phenomena such as high water levels may have taken a toll of nests which are pebble-lined depressions in the sand.

Studies have been conducted in co-operation with the Long Point Bird Observatory to identify other factors contributing to the species' decline. Field observations have indicated that predation on plover eggs by ring-billed gulls *(Larus delawarensis)* presents a serious threat throughout the lengthy four-week incubation period. This threat has intensified in recent years because ring-billed gull populations on the Great Lakes have increased.

Snyder, and other researchers from the Royal Ontario Museum, estimated in 1927-8 that the adult population of piping plovers on the Norfolk County breeding grounds in summer "... would be one hundred pairs or more." By 1977, only one nesting pair, four or five unmated males, and a pair that did not nest were present. The future for piping plovers in Ontario is indeed grim.

BLUE RACER

Coluber constrictor foxi

As the name suggests, the blue racer is one of Ontario's fastest snakes. It is also one of our largest snakes, attaining an average length of four to five feet. The uniform blue-gray dorsal coloration and contrasting whitish to grayish belly of mature specimens is both distinctive and attractive. Immature snakes up to about three years of age are patterned with darker blotches on a pale gray background.

The blue racer is non-poisonous and beneficial to man in the control of insect and rodent pests. However, it has been the victim of much undeserved hostility simply because it is a snake and a big one. Public co-operation is essential to dispel misconceptions which have resulted in the persecution of these snakes.

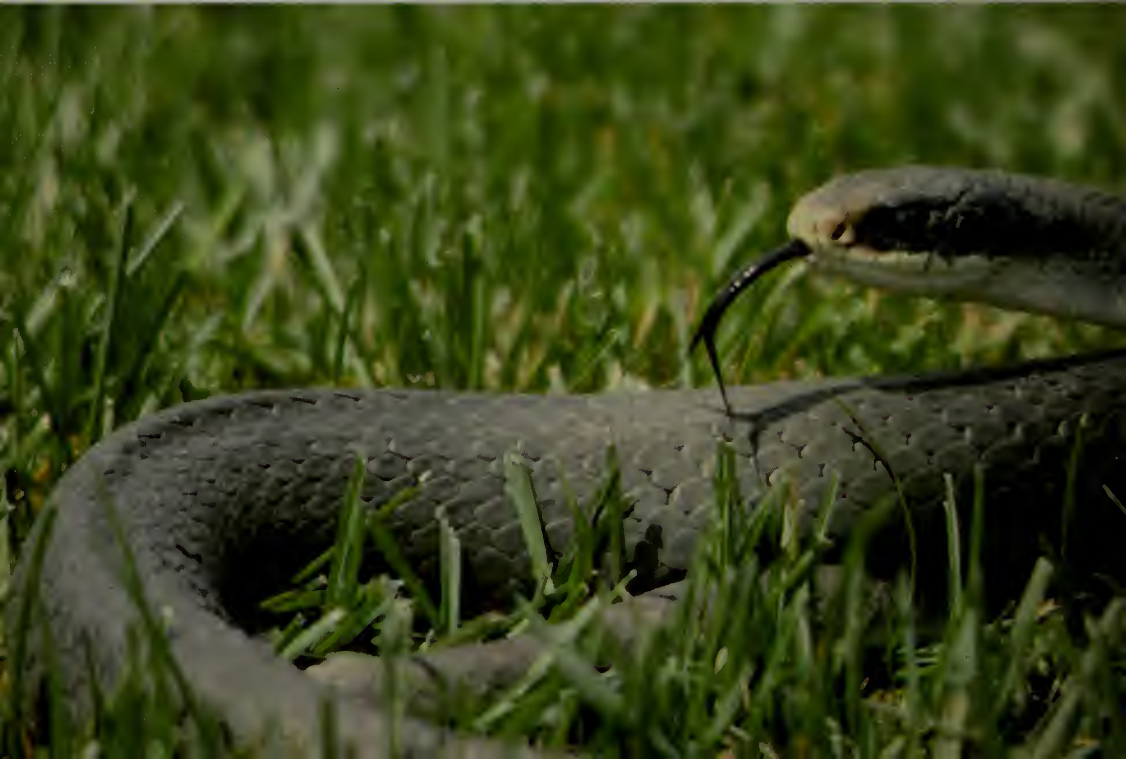
The grassland and open woodland habitat required by blue racers was once limited to the extreme southwestern corner of the Province. This area was the easternmost extension of the great western prairie; it contained prairie grasslands and was bordered by prairie-forest ecotones.

In the 19th century, land clearing and small-scale farming may have benefitted this species by creating habitats with characteristics similar to those of natural prairies. New grain and hay fields with large rodent populations resembled prairie grasslands. Hedgerows provided shelter from predators, and stone fences and crumbling masonry served as denning or basking sites. It seems likely that blue racers expanded their range by occupying these new habitats.

The shift to intensive farming in the 20th century drastically altered the rural landscape in ways that were detrimental to blue racers. In southwestern areas, hedgerows and other cover were reduced and populations of insect and rodent prey declined. In addition, increased traffic resulted in more road kills.

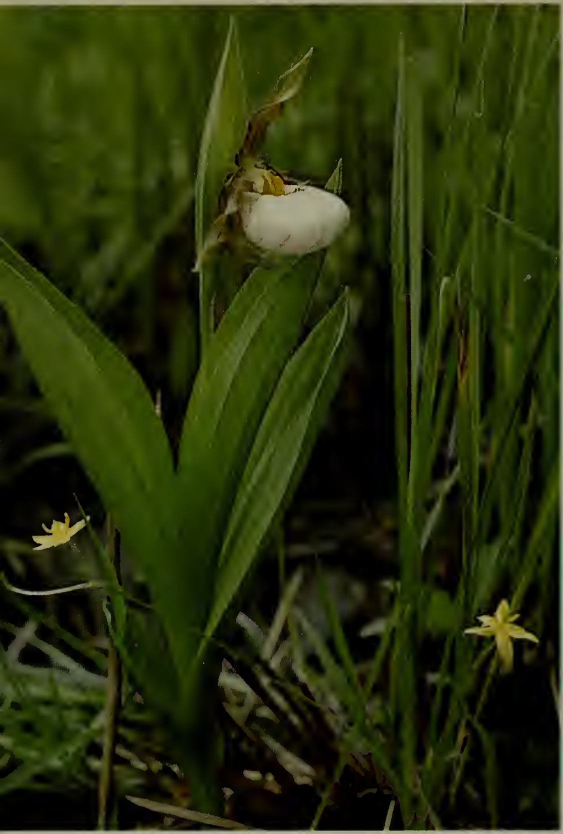
In mainland areas where these pressures have been most severe, the extinction of blue racers comes as no surprise. However, the disappearance of the snakes from areas in which the habitat is apparently still suitable indicates that unknown factors are operating.

Only one small population of blue racers remains in Ontario, on Pelee Island in Lake Erie. Studies of this population have been sponsored by the Ministry of Natural Resources to identify areas of critical habitat and to investigate factors affecting racer survival. These include the effects of predation and environmental contamination, and the availability of denning and nesting sites and suitable food supplies. This information will be used to manage the species in the face of growing development pressures on the island.



Ministry studies should determine the reasons for the decline of the blue racer.

Preferred habitat of the blue racer on Pelee Island.



SMALL WHITE LADY'S SLIPPER

Cypripedium candidum

The small white lady's slipper is the first plant species to be designated as endangered in Ontario. Although the extent of this orchid's former Ontario range is incompletely known, the available records indicate a serious decline.

The three known Ontario populations of the orchid occur in different habitat types. In Lambton County, the habitat is a unique area of open wet prairie, and in Hastings and Norfolk counties, the plants are scattered over fen and open marsh, respectively. The form of the plants varies slightly under these different conditions.

The small white lady's slipper has declined because of habitat loss. Urbanization and land drainage for cultivation have destroyed most of southwestern Ontario's wet prairie habitats, and in some areas natural plant succession has created shady conditions which the orchids cannot tolerate. Management practices, simulating natural phenomena such as fire, will probably be necessary to arrest encroachments by woody shrubs in at least one of the three Ontario orchid habitats.

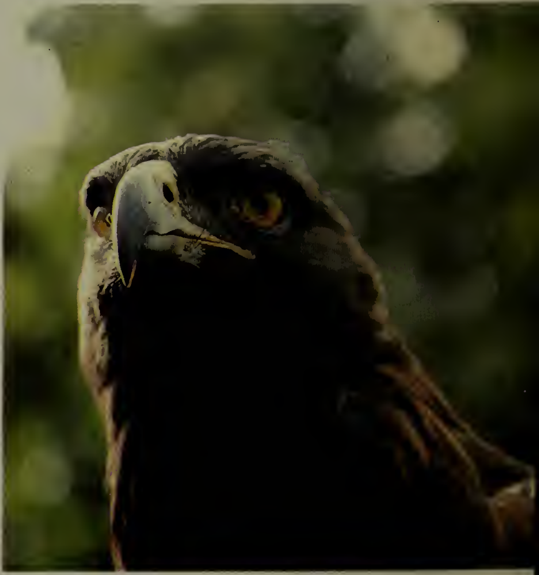
Generally speaking, the identification and protection of endangered and threatened plant species pose numerous problems. Although long lists of "endangered" or "threatened" or "rare" plants have been developed by various individuals and organizations, very little is known about the historical or current distribution of many listed species, or about present or potential threats to habitat. Interestingly, many of the plant species recommended for protection are already sheltered within national and provincial parks, especially in southwestern Ontario where the highest proportion of listed species occurs.

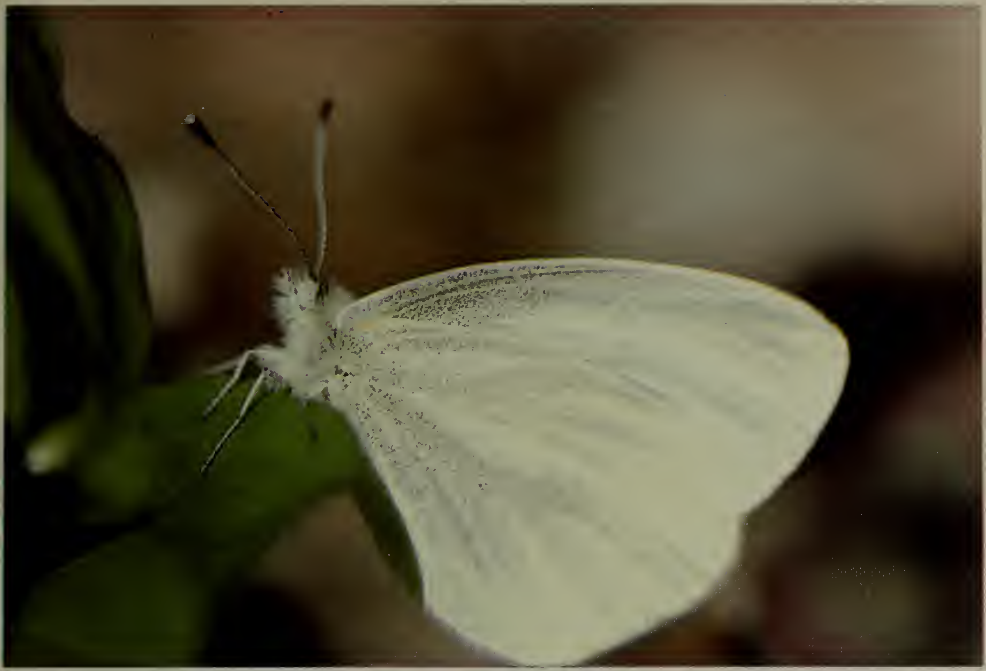
Nature reserves and parks may provide habitat protection but this alone does not guarantee the survival of endangered plant species. Many plants are highly intolerant of even slight variations in soil chemistry, lighting and other factors, and may disappear from an area as natural successional changes take place. For this reason, management is also necessary to maintain conditions essential for the survival of some plant species.

GOLDEN EAGLE

Aquila chrysaëtos

The golden eagle is so named because of the golden brown coloration of feathers at the back of the head and neck but the name is somewhat misleading. With the exception of the "golden" neck feathers, the rest of the body plumage appears dark brown.





Historically, golden eagle nesting sites were reported from a few locations in the Rainy River, Thunder Bay and Kenora districts of northern Ontario and from Frontenac and Hastings Counties in southern Ontario. Recent nesting reports are from remote wilderness areas and additional sites have probably escaped detection.

The productivity of golden eagles is low. Frequently, only one young is fledged from a clutch which usually consists of two eggs. This factor, combined with high juvenile mortality and nesting of some pairs in alternate years only, accounts for the low turnover of individual birds.

Northern Ontario golden eagle populations require protection chiefly because of the potential for human disturbances in their nesting territory. If disturbed at critical times of the breeding season, the birds will readily abandon their eyries. The identification and protection of breeding sites is necessary before human encroachments threaten Ontario's golden eagle population.

WEST VIRGINIA WHITE BUTTERFLY

Pieris virginiensis

The West Virginia white butterfly is known to exist in Ontario only in two locations. One very small population survives on Manitoulin Island and a larger population is present in Halton County. Records from other parts of the Province indicate this species was once more widespread.

The distribution of the butterfly is limited to tracts of hardwood forest where toothwort *(Dentaria diphylla* and *Dentaria* X *maxima)* grows. Although the adult butterflies feed on nectar from a variety of plants, eggs are laid only on toothwort and the larvae feed exclusively upon the foliage of this plant.

Toothwort is a short-lived spring plant which must complete its growth before the forest canopy closes in late May. Extensive stands are present in Halton County chiefly because of favorable light and soil-moisture conditions. Too much light results in drier soil conditions, and toothwort is eventually replaced by other plant species.

No one knows why the West Virginia white is found in only two of the many Ontario locations where toothwort grows. However, a recent Ministry sponsored study has indicated that the extreme abundance of toothwort and the diversity of the intermediate-stage hardwood forest in Halton County are partly responsible for the presence of the butterflies.

Another Ministry study, carried out in 1977, determined the extent of the forested area inhabited by the butterflies, with emphasis on the identification of "core" habitats and dispersal patterns. This information will help to ensure the survival of the butterflies in the Province.

PEREGRINE FALCON

Falco peregrinus anatum

The decline of the peregrine falcon dramatically illustrates the effects of deteriorating environmental quality on wildlife. The discovery, in the 1960s, that massive reproductive failures were linked to the contamination of natural food chains by DDT, aroused worldwide concern.

Predatory birds accumulate DDT residues from contaminated food and store them in body tissues. In the case of the peregrine, residues accumulated from its diet of small birds have caused aberrant breeding behaviour and the production of thin-shelled eggs which crack or dry out. As a result, peregrines are now virtually extinct east of the Rocky Mountains and south of the tree line. Populations in other areas have also been affected.

Restrictions on the use of DDT made it possible to consider for the first time the reintroduction of peregrines to Ontario. After considerable planning and preparation, a peregrine release project was undertaken by the Ministry of Natural Resources using four young birds obtained from Canadian Wildlife Service breeding facilities in Alberta.

The Canadian Wildlife Service, in co-operation with the Government of Alberta, has been building up a breeding stock of peregrines since 1970 to ensure that a supply of young birds is available for release in the wild. The success of this work, and similar work conducted at Cornell University, New York State, will help to determine the fate of the peregrine in eastern North America.

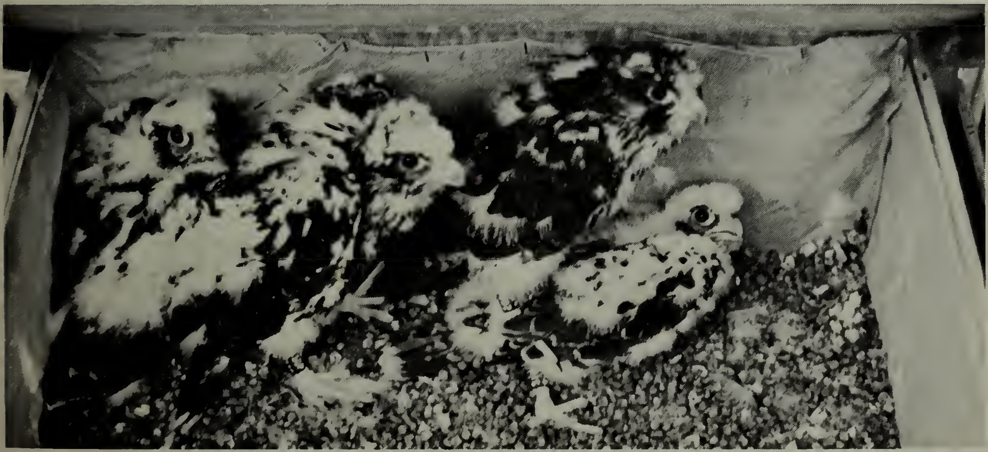
Ontario's objective is to establish young birds at cliff ledges formerly occupied by wild peregrines. The site chosen for the 1977 pilot project was in Algonquin Provincial Park. It is hoped the birds will come to recognize the cliff ledge as "home" and eventually return to breed there.

The reintroduction technique is known as "hacking birds back to the wild" and was originally developed by falconers to establish birds of prey at desired locations. In the Algonquin experiment, the four young peregrines were placed in a "hacking box" or nest box, attached to a cliff ledge. They were fed quail through a large plastic tube inserted in the top of the box. Human contact was kept to a minimum to ensure that the birds were in a "wild" condition when released.

Of the four birds which fledged, one immediately left the area. The other three birds remained in the vicinity of the nest box and developed hunting skills and flying ability. One bird was lost to an avian predator, and the last of the remaining birds migrated south late in August.

In view of the high natural mortality among young birds of prey, further releases will be necessary to establish peregrine falcons in Ontario. This is also important to ensure the establishment of a breeding population since peregrines do not reach reproductive maturity until two to three years of age. Furthermore, the ability to reproduce will depend on the availability of a food source low in pesticide residues, both in Ontario and in the wintering grounds outside of Canada.

Any one who has been fortunate enough to see a peregrine in flight would agree that it is one of the most beautiful birds in action. If all goes well, the release project will eventually give more people the opportunity to view peregrines soaring in Ontario skies.



Young peregrine falcons just arrived from Alberta.

KIRTLAND'S WARBLER
Dendroica kirtlandii

The Kirtland's warbler is one of the world's most critically endangered birds. According to a recent census of the central Michigan jack pine plains, the species' only known breeding range, the population is now less than half the estimated population of 1,000 birds which was present in the early 1960s.

The specific habitat requirements of the Kirtland's warbler have contributed to its decline. It usually nests only in 8-, to 20-year-old stands of jack pine *(Pinus banksiana).* This age class provides thickets of living branches close to the ground and the nests are situated in shallow, sandy depressions directly beneath the bottommost branches. As the lower branches of maturing trees are lost, the stands are abandoned.

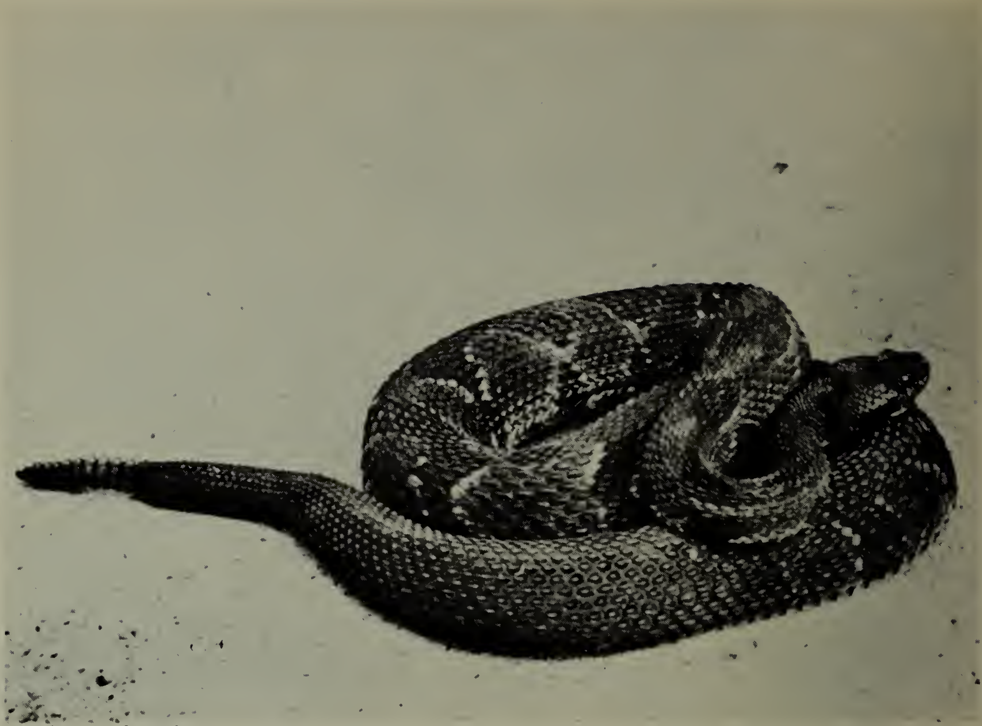
In the past, the continued production of suitable warbler habitat depended on forest fires which opened up large tracts for jack pine regeneration. As fire control techniques improved, the scope of fires was restricted and the acreage of jack pine was reduced. In Michigan, this problem has been alleviated by management practices, including controlled burns and reforestation.

Nest parasitism by brown-headed cowbirds *(Molothrus ater)* also presents a threat to warbler survival. Female cowbirds parasitize the nests of other species by removing eggs from the original clutch and depositing their own eggs for incubation and foster care. The Kirtland's warbler is especially vulnerable as a host because the population is small and confined. The species could conceivably have been exterminated by this threat alone had it not been for management intervention in the form of cowbird control programs. Thanks to these measures, levels of nest parasitism have been greatly reduced.

The presence of a breeding population of the Kirtland's warbler outside of Michigan has

Ministry team erecting mist net in Kirtland's warbler habitat.

Left: This peregrine falcon was one of the last to breed in the wild in Ontario.



Timber rattlesnake.

long been debated. Jack pine ranges extensively across northern Ontario and much of Canada, but in many areas wet surface conditions early in the nesting season, or insufficient cover, make the habitat unsuitable for this ground-nesting bird. Nevertheless, a number of Kirtland's warbler sightings have been reported in Ontario.

The most recent Ontario sightings took place in June and July, 1977, when a single singing male was photographed, recorded, mist-netted and banded on the jack pine plains near Pembroke. The species had been reported in the same area on several previous occasions; in 1916 the birds were described as "not uncommon"; in 1939 a single singing male was found; and in 1946 two additional sightings were reported. Most records of the Kirtland's warbler from other parts of Ontario are of migrant birds sighted or captured in spring and fall.

Although a nest has never been discovered in Ontario, the possibility that breeding may have taken place cannot be entirely discounted. Surveys conducted by the Ministry of Natural Resources will help to determine if a small breeding population is present in any of Ontario's jack pine regions. If this highly endangered species does indeed reproduce in Ontario, permanent monitoring and management of its breeding range will be necessary.

TIMBER RATTLESNAKE

Crotalus horridus horridus

The timber rattlesnake should probably be included in a list of extinct rather than endangered Ontario species. It formerly ranged from the Niagara gorge region of Welland County northward to the Manitoulin District. The last positively identified specimen was taken at Niagara Glen in 1941.

All rattlesnakes are characterized by a rattle at the tip of the tail, and identification is based on features such as size, scale patterns, color and markings. Timber rattlesnakes have two major color phases – the grayish brown or yellow ground color may have blackish crossbands, or may be obscured by darker pigment. In both phases, the tail often appears black, giving rise to the name "velvet-tail rattler".

Timber rattlesnakes have been persecuted in many parts of their range and large numbers have been killed at communal den sites where more than 100 snakes may hibernate together.

Some people may be puzzled that the killing of venomous snakes should be a matter of concern. However, rattlesnakes fulfil a useful role in nature as predators on rodents, and they are not normally a threat if left undisturbed.

EASTERN COUGAR

Felis concolor couguar

The presence of cougars in Ontario has long been debated because data on hand are based solely on sight records. No acceptable scientific evidence has been obtained since the turn of the century.

Obviously many difficulties exist with sight records; a fleeting glimpse of an animal frequently results in misidentification even by experienced observers. Nevertheless the quality of some descriptions by competent observers and the pattern of sightings, which tends to correspond with the present deer range, lead to the conclusion that cougars likely exist in small numbers in Ontario.

The distribution of the eastern cougar has apparently fluctuated in response to human disturbances and environmental modifications. During the 19th century, cougars initially benefitted from activities such as logging which opened up new habitat for white-tailed deer, the principal prey species. Then as settlement gained momentum, numbers declined.

This secretive animal is highly sensitive to human disturbances and many factors will influence its ability to co-exist with man. It is now endangered throughout its range and complete protection is essential.

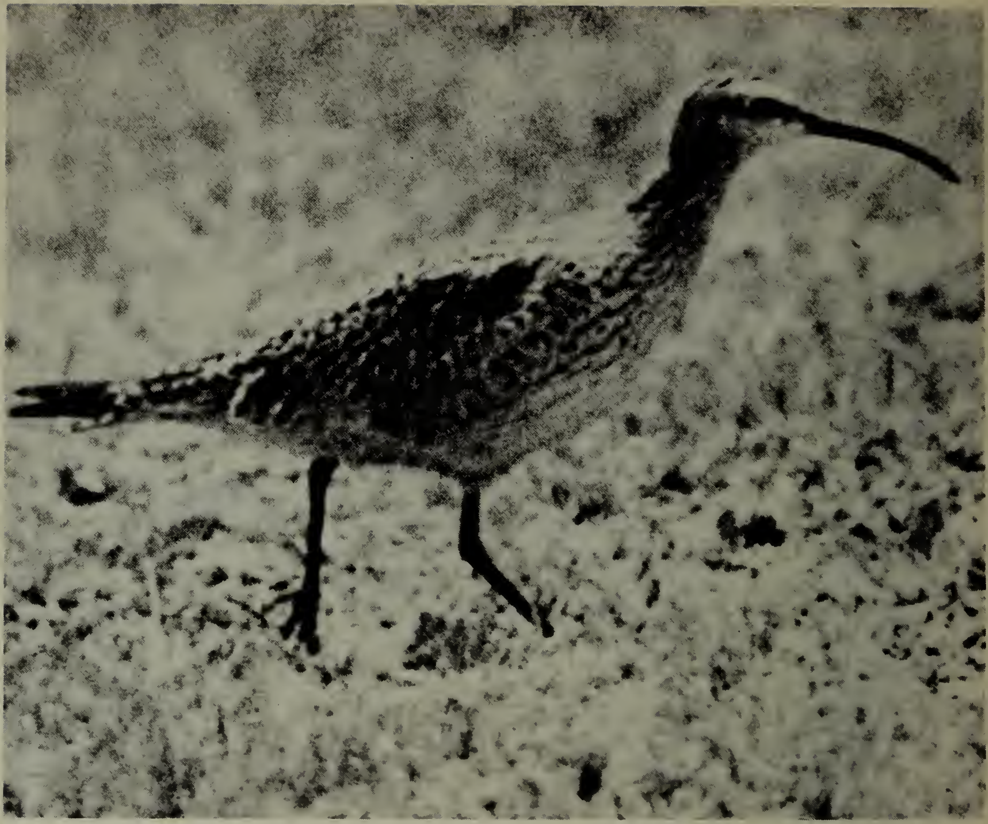
LAKE ERIE WATER SNAKE

Natrix sipedon insularum

The Lake Erie water snake is a pale gray subspecies of the common northern water snake *(Natrix sipedon sipedon)*. Although the species occurs widely throughout eastern North America, the distribution of the Lake Erie subspecies is highly localized. Its entire world distribution is limited to islands in western Lake Erie.

The gray coloration, and absence or reduction of body markings, represent adaptations to the island habitat. The snakes hunt mainly in the vicinity of the lake and are often found on the limestone rocks which rim the islands. In this type of environment, plainly colored individuals are less visible to predators than banded individuals — hence the adaptive advantage of uniform coloration.

The recent decline of the Lake Erie water snake is attributable primarily to shoreline development and the associated destruction of habitat. Deliberate persecution, environmental contamination and the flooding of den sites during periods of high water may also have played a role. Protection and careful habitat management may reverse the decline.



ESKIMO CURLEW

Numenius borealis

The near-extinction of the Eskimo curlew in the late 19th century helped disprove many of the early notions about inexhaustible wildlife resources. The decline of this species and the extinction of the passenger pigeon during the same period pointed to the need for wildlife management.

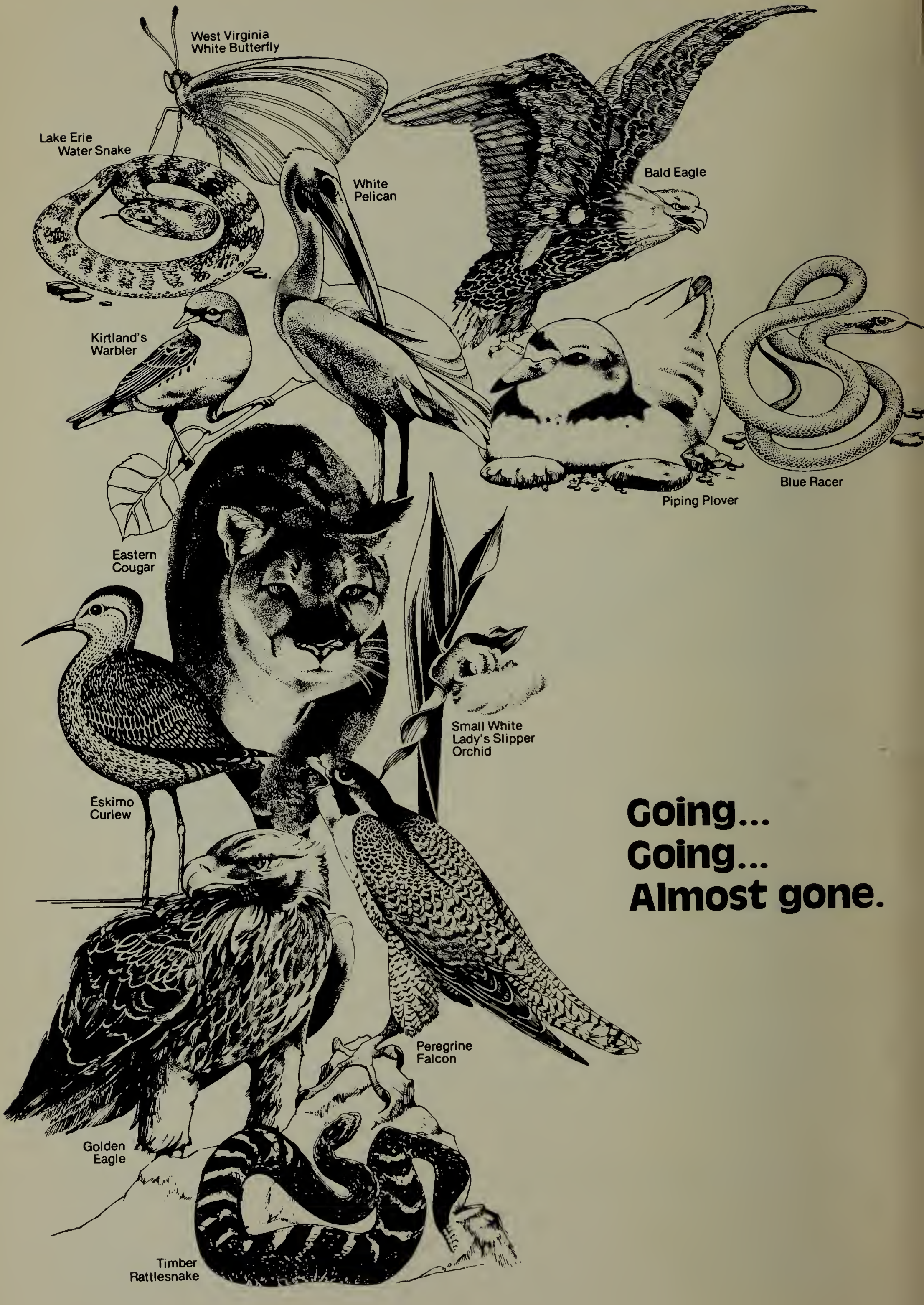
Like the passenger pigeon, the Eskimo curlew was pursued by market hunters. The kill was heaviest in spring as flocks from South American wintering grounds made their way up the Mississippi flyway. Large numbers were also taken on the Atlantic coast during the fall migration. The birds were very heavy at this time, and the thick layer of fat, accumulated from a diet of insects and berries on their northern breeding grounds, earned them the name "dough birds."

Little is known about the breeding distribution of the Eskimo curlew. A breeding population of this shorebird was observed only once, on the barren grounds of northwestern Mackenzie, more than a century ago. The nests were described as leaf-and-hay-lined depressions in the grassy tundra. The clutch consisted of three to four pale brown to olive eggs, blotched with darker browns and grays.

Although the Eskimo curlew is not known to have nested in Ontario, one of the fall migration routes apparently passed through the Province. Some migrating flocks from breeding grounds in the far north probably skirted the west coast of Hudson Bay and passed through Ontario and the Great Lakes region en route to the Atlantic coast. However, most of the flocks continued across Hudson Bay to Labrador and Newfoundland and then swung south.

Occasional sightings of Eskimo curlews on the established flyways provide evidence that a small population still exists. In Ontario, a sighting of two birds on the west coast of James Bay was reported in August, 1976. If this sighting is indeed correct, it is the first Ontario record in more than 100 years.

The last undisputed sighting of passenger pigeons in Ontario took place in Penetanguishene in 1902.



Going...
Going...
Almost gone.

THE ENDANGERED SPECIES ACT, 1971

Chapter 52

Interpretation

1. In this Act,

(a) "Minister" means the Minister of Lands and Forests;

Note: Any reference to the Minister of Lands and Forests shall be deemed to be a reference to the Minister of Natural Resources, 1972, c. 4, s. 12.

R.S.O. 1970, c. 186 as amended

(b) "officer" means a Conservation Officer or a Deputy Conservation Officer appointed under *The Game and Fish Act,* and includes a member of the Royal Canadian Mounted Police Force or the Ontario Provincial Police Force.

Administration of Act

2. The administration of this Act is under the control and direction of the Minister.

Regulations

3.—(1) The Lieutenant Governor in Council may make regulations declaring any species of fauna or flora to be threatened with extinction by reason of,

(a) the destruction of its habitat or a drastic modification or severe curtailment thereof;

(b) over-exploitation;

(c) disease;

(d) predacity;

(e) the use of chemicals; or

(f) any other factor or factors considered relevant.

Regulations may be limited

(2) Any regulation may be limited territorially or as to time or otherwise.

Powers and duties of an officer
R.S.O. 1970, c. 186 as amended

4. For the purposes of this Act an officer has the powers and duties of an officer under *The Game and Fish Act.*

Prohibited acts

5. No person shall wilfully,

(a) kill, injure, interfere with or take or attempt to kill, injure, interfere with or take any species of fauna or flora; or

(b) destroy or interfere with or attempt to destroy or interfere with the habitat of any species of fauna or flora,

declared in the regulations to be threatened with extinction.

Offence

6. Any person who contravenes this Act is guilty of an offence and on summary conviction is liable to a fine of not more than $3000, or to imprisonment for a term of not more than six months, or to both.

Commencement

7. This Act comes into force on the day it receives Royal Assent.

Short title

8. This Act may be cited as *The Endangered Species Act, 1971.*